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The I.C.V.D. Administrative Report.

A fortnight ago we noticed the first annual Scientific Memoir issued from the Imperial Bacteriological Laboratory at Muktesar. The annual administrative report of the work of the whole Indian Civil Veterinary Department during the same period—the official year 1908-9—demands equal attention. The report is written by Col. H. T. Pease, the Inspector-General of the Department, who concludes with the words—"I have nothing but praise for the work done by the Imperial Veterinary Staff during the year, and I think that they have reason to be satisfied with the results of their labours." Fully agreeing with this, we add that the report simply teems with evidence of the difficulties under which the work has been performed. One of these, of course, is native ignorance and prejudice; but scarcity of funds, and consequent undermanning of the staff, are even more serious ones.

The Department has a threefold activity—training native veterinary assistants, dealing with contagious disease both by administrative preventive work and research, and the superintendence of breeding operations. Some thirty English veterinarians, assisted by native graduates of inferior training, are responsible for the whole of this work throughout the vast territory controlled by the Department. One welcome addition to the Department—a physiological chemist—has recently been made; but the veterinary staff has not been strengthened during the year, as one vacancy has arisen through death, and one new officer been enrolled. Obviously this staff is far too small; each officer is supposed to do more than one man can do; and this renders the undoubted progress that has been made all the more creditable.

Good work has been done at the various Colleges, though the largest and best of them—the Punjab one is greatly overcrowded. There is an enormous demand for vernacular trained men, which the colleges at present cannot satisfactorily meet; and the establishment of an Imperial Veterinary College, training natives up to the standard of the European schools, appears probable in the near future.

A great many animal diseases are dealt with in the report, and while much good work has been done in their actual prevention, perhaps even better work has been in the acquirement of knowledge regarding them. The Inspector-General regards the year's work as epoch making in connection with equine surra, which it is now certain is, in many cases, a curable disease. This is all the more satisfactory from the fact that surra is now known to be much more widely distributed in India than was previously recognised; indeed, it seems to exist wherever conditions are favourable for its spread.

Dourine appears to be finally stamped out of India; no case has occurred for three years past.

Rinderpest continues to be the most serious disease of cattle. The deaths reported from it during the year are 238,374, but the native reporting is so unsatisfactory that this figure is far from representing the total mortality. Anti rinderpest inoculation has given excellent results wherever it could be properly carried out, and its success is gradually overcoming native prejudice. Some important knowledge has been gained regarding the prevalence of hæmorrhagic septicæmia, which now really seems to rank second in importance to rinderpest. Capt. Holmes has prepared a vaccine which has given good results experimentally, and is now issued for trial in the field.

Foot-and-mouth disease is very common throughout India, and the veterinary staff have done good service in inculcating the simple treatment requisite.

Space compels us to refrain from noticing other diseases, and forbids more than the briefest reference to the breeding operations.

Here again a great deal of good work has been done throughout the country, especially with regard to cattle breeding. One of the most gratifying features of the whole work of the Department is the continued progress of the Government Cattle Farm at Hissar. This has been under the management of the C.V.D. for ten years, and fortunately it has been possible to retain the present Superintendent, Major Farmer, in the same office for a long period. The herd is now, in the Inspector General's words, "far and away the finest in India." At present it numbers some 1200 cows, but sanction has been given for these to be increased to 1500.

Altogether the report is a monument of work accomplished, under great difficulties and discouragements, by the tireless industry of a very few men. To quote again from the Inspector-General's report, the work "continues to increase out of all proportion to the staff available to cope with it." Unfortunately Col. Pease seems to have little hope of an increase in his European staff at present, and that is the one dark feature in an otherwise interesting and gratifying publication.

VACCINE THERAPY IN THE TREATMENT OF FOLLICULAR MANGE.

A. E. METTAM, Royal Vet. Coll., Dublin.

I was much interested in the abstract from the *Berliner Tierärztliche Wochenschrift* published in *The Veterinary Record* of October 30th, and as the opinions expressed therein are very similar to my own I venture to send you the following note. I am aware that one swallow does not make a summer, and the result of the treatment of one case may have no influence on treatment generally, but perhaps others may be tempted to try a vaccine similar to one employed here.

I agree with Prof. Gmeiner that the staphylococcus pyogenes albus is the chief cause of suppuration of the skin in follicular mange, and before the note you published appeared I had already begun the use of a vaccine prepared from the staphylococcus. The organism was isolated on agar without any difficulty, and from a twenty-four hours old culture the vaccine was prepared as follows according to the method of Sir Almroth Wright. The culture was washed off the medium with sterilized normal saline solution, and the suspension of cocci was then sterilized at a temperature of 56 C. for an hour. The cocci in unit volume were then counted, that we could give a known dose. The method of counting is to mix equal quantities of suspension of organism and blood with a diluent of normal saline, say three times the quantity of suspension or blood, and after thorough mixing, to make smears on slides, stain and fix with Leishman's stain. The number of cocci and blood corpuscles, the number of blood corpuscles per cm. being known, in a number of fields are counted, and then by a simple sum in arithmetic the number of cocci on a cubic millimetre can be found. We then can readily ascertain how many cocci are present in a cubic centimetre of the suspension, and we now dilute it down until it contains 250,000,000 or 500,000,000 cocci per cubic centimetre. This was done, using all the necessary precautions to prevent contamination.

The animal is an Irish terrier, and had extensive lesions of follicular mange extending over the whole head, front of chest and all four limbs. The skin was thickened, suppurating, beads of pus could be squeezed out with little pressure. The animal looked miserable, and a very pronounced odour was given off from the skin. He was altogether as bad a case as one could wish to try a vaccine upon. Smears made from the pus showed the presence of the demodex and cocci. The opsonic index was reckoned, and compared with that of a normal Irish terrier taken as unity. On October 11th it was ·4, on October 12th ·3. The index, it may be mentioned, is obtained by incubating washed leucocytes, the patients serum, and a quantity of the suspension of cocci for half-an-hour in the incubator, then making a film and staining. The polymorphonuclear leucocytes phagocyte the cocci, and a number of such leucocytes up to one hundred is observed, and the number of cocci engulfed noted. The number of cocci phagocyted divided by the number of leucocytes counted gives the average contained. Parallel experiments with normal dog's leucocytes and serum are carried out and the result obtained from the normal corpuscles reckoned as unity. In our case, reckoning the normal dog as 1, the patient's opsonic index was ·4 on Oct. 11th, ·3 on Oct. 12th markedly, therefore inferior to the normal dog.

On Oct. 12th 500,000,000 cocci were injected into the fascia behind the left elbow, the dog's temperature being 103·4 F.

Oct. 13th.—Temp. 102. Dog lively.

Oct. 14th.—Temp. 101·6, spirits improving. Opsonic index improved. The positive phase is established. The lesions washed with 2 per cent. common salt solution containing ·5 per cent. of citrate of potash. The object of this solution is to favour the flow of lymph through the affected areas, the lymph high in opsonic power soaks through the tissues. The citrate of potash is to prevent coagulation of the lymph. After the lapse of half an hour or so the lesions are dried and dusted over with Powdered chalk 400 parts, Calcium chloride 1 part, to prevent escape of the lymph from the part. This treatment was continued daily for five weeks when the washing and chalk powder were stopped and paraffinum molle applied to the parts still unhealed. I came to the conclusion that the constant washing macerated the epithelium, and that the formation of scabs caused the animal to rub and scratch.

The animal steadily improved in condition, and in spirits, the lesions ceased to spread and there was not so much discharge, and the fœtid odour was less pronounced.

As there is no doubt that a condition of sepsis is present, and it is the rule to find in these cases a "temperature" I give the daily temperatures in a tabulated form:—

Oct.	15	102·5	Nov.	8	101·4
	16	102		9	101
	17	103		10	101·2
	18	102·1		11	101
	19	102·8		12	101·5
	20	102·8		13	101·5
	21	103·2		14	101·3
	22	103·4		15	101
	23	102·3		16	100·4
	24	102·4		17	100·9
	25	102·2		18	101·6
	26	102·6		19	101·5
	27	101·5		20	101
	28	102·5		21	100·5
	29	102		22	100·8
	30	100·5		23	101
	31	102		24	100·5
Nov.	1	101·5		25	101
	2	102		26	100·8
	3	101·8		27	101
	4	101·5		28	100·5
	5	101		29	101·1
	6	101·6		30	100·5
	7	100·8	Dec.	1	100·2

On October 16th a fresh lesion made its appearance on the back, but this was expected, as in the treatment of furunculosis in man by vaccines it is

not unusual to have a crop appearing after injecting the vaccine, but the boils usually abort.

On October 18th the animal had improved in spirits and general health, but a new lesion appeared about the shoulder towards the mid-line of the body. 1,000,000,000 cocci were injected.

On October 19th the lesion just mentioned aborted, and this was very evident on October 20th, and on October 21st it was dried up.

On Oct. 25th a further vaccination of 1,000,000,000 cocci was given, a new lesion had appeared behind the one of October 18th. This also aborted during the next two days. The animal continued to improve, and on Nov. 1st received 300,000,000 cocci. He continued steadily to improve not only in general health but in weight. There was considerable trouble with the skin lesions of the head as the patient rubbed and scratched himself, possibly due to traction of the dessicating scabs.

On November 13th he got a last vaccination of 1,000,000,000 cocci. On this date a search for demodices was made, and a few found in one or two suppurating foci of the head.

On November 16th an abscess the size of a hazel nut developed over the nasal bones; this was evacuated, and the cavity speedily filled up with granulation tissue.

On November 22nd there were only four small areas denuded of epidermis, and these soon became covered, and the animal at the end of the month may be considered as practically cured.

It may, of course, relapse, it is too soon to give an opinion, but another injection will be given to prevent it. The result is certainly encouraging, and I have another case equally bad just commenced treatment.

At no time since the patient came into the laboratory has any application been made to the skin save those mentioned above. He has not received any medicinal treatment whatsoever, and he has received only five doses of vaccine.

I should like here to thank Mr. Carter Armstrong, veterinary student, for his careful attention to the patient.

AMAUROSIS FOLLOWING PNEUMONIA.

While reading in your issue of Nov. 6 some notes on clinical cases, by Mr. E. C. Winter, I was interested to come across one on a case of blindness supervening on pink eye.

It called to my mind a case which occurred in my practice out here a year ago, in a broncho mare which had been brought in from the farm suffering from pneumonia. Five days after I had ceased to visit her the owner called me up on the 'phone saying he thought she had staggers, as she was acting in a peculiar way and banging her head whenever she turned round in the box.

On examination, which was carried out under difficulties, she being very nervous and not having the sweetest of tempers, I found she was totally blind, both pupils being in an amaurotic condition. She carried her head on one side, with nose poked out, and could not bear anyone near.

As I could not find evidence of any injury I came to the conclusion that there must be effusion in the neighbourhood of the optic nerves, and gave the owner a very guarded prognosis, the case being, to me, an unusual one.

Treatment consisted in blistering over the poll with Hydrarg. biniod. and the administration of Pot. iodide and Liq. strychnine internally. This was continued for a fortnight, when I was pleased to find she was beginning to recover her sight. After a few days the medicine was continued, and by the end of a month the mare had completely recovered, much to the delight of the owner.

T. R. R. Hoggan, M.R.C.V.S.
Vancouver, British Columbia.
November 24.

ABSTRACTS FROM FOREIGN JOURNALS.

The Intra-cutaneous Tuberculin Test.

The intra-cutaneous (or intradermal, as it is called by the French authors) method of applying the tuberculin test, which was advocated some little time ago by Moussu and Mantoux (see *Veterinary Record*, November 14th, 1908, page 308) is now engaging the close attention of several German workers, notably Foth, Römer, and Joseph. The last-named investigator carried out a somewhat extensive trial of the method in August and September of this year, testing the results of each observation by the slaughter and careful post-mortem examination of the animal, whether reacting or not. He now publishes his results, which are certainly striking; and describes his methods, which in some respects differ from those of Moussu and Mantoux. Before summarising these, it may be noted that the author claims the priority of introducing the intra-cutaneous method for Meudel, a German, who first drew attention to it and made some observations upon it in human practice.

Contrary to the French authors, who perform the test upon a sub-caudal fold of the bovine skin, Joseph selects the side of the neck as a more suitable site for injection. He does not shave or depilate the region, but washes it with alcohol before the injection, to avoid the possibility of accidental germs being introduced with the needle and causing a non-specific swelling which might be mistaken for a reaction. The area of skin chosen should of course be free in the first place from nodules and swellings; and Joseph regards it as very important that the exact thickness of the skin should be ascertained by means of Lignières' measuring apparatus before the injection and also at the subsequent inspections. This affords a more accurate reading of the reaction than is possible to the observer relying solely upon his sight and touch. Moreover, the normal thickness of the skin is subject to rather considerable variation in animals of different breeds and ages. A measuring apparatus is therefore very helpful in estimating the results of the test, especially to a beginner; and though

men practised in the intra-cutaneous use of tuberculin may dispense with it, yet even these find it valuable in deciding doubtful reactions.

The needle used should be as fine as is possible consistent with strength, in order to reduce the purely traumatic lesions within the skin to the minimum. For the same reason, whether the tuberculin be used pure or diluted, the quantity of fluid injected should never exceed 0·1 c.c.

The injection is made in the thickness of the skin as superficially as possible, in order to avoid all chance of a subcutaneous injection. After the injection, a small swelling, about the size of a pea, is perceptible, and shows that the fluid has been introduced intra-cutaneously.

The dose of tuberculin is of great importance, and in this connection the brand of tuberculin which is used is of moment. The French investigators used ·01 to ·02 c.c. of tuberculin for a dose. Joseph suggests that the French tuberculin, which is not tested by the Government, is far from being of uniform strength. In his opinion the above doses of the French tuberculin were probably too small, as the same quantities would certainly be too small in the case of the German Government-tested tuberculin which he himself has used in all his experiments. As the intra-cutaneous use of tuberculin is still in the experimental stage, and the best dose is not accurately determined, Joseph regards it as very important that only tuberculin of uniform activity should be used. Otherwise an accurate comparison of results is impossible.

Generally, Joseph has used his officially tested tuberculin in doses of ·05 c.c., diluting it with the same quantity of normal saline solution. After a doubtful reaction, he advises repeating the test on the other side of the neck, using ·1 c.c. of undiluted tuberculin. He is, indeed, doubtful whether the latter dose will not be ultimately found the best one for general use. In some of his experiments, he gave the two doses simultaneously in different regions of the same animal's neck, and compared the results. One animal gave a doubtful reaction to the smaller dose, but a positive one to the larger. The autopsy revealed mediastinal tuberculosis.

As a result of the injection, slight and purely traumatic swellings may appear during the first day, but these have always disappeared 48 hours after the injection. Apart from these, the injection has no effect upon animals free from tuberculosis. In tuberculous animals the specific reaction generally appears as a soft œdematous swelling of varying circumference, which is often painful. In some exceptionally sensitive animals, this swelling may be apparent 24 hours after the injection. In the majority of cases, however, it is only apparent after two days, and generally reaches its maximum in the course of the third day, or, in rare cases, on the fourth day.

When several inspections of the animal after injection case be made, it is well to make the first 48 hours after injection, as then any traumatic lesions, which might be misleading if the examination were made earlier, will have disappeared. The determinative examination is that made 72 or 96 hours after the injection, and when only one examination of the animal is made, Joseph recommends that it should be 72 hours after injection. This is, he considers, quite reliable in practice.

The swelling of the skin is the decisive lesion; as other alterations, such as reddening, only occur irregularly. Joseph's experimental tables show that this swelling varies greatly in intensity. Sometimes the normal thickness of the skin is doubled or almost trebled, and these reactions are of course very apparent. Much smaller swellings are, however, absolutely diagnostic of tuberculosis, and it is with regard to these that the use of the measuring apparatus before and after injection is of great value. Joseph regards every animal which, when measured at the 72nd or 96th hour after injection, shows a thickening of the skin of *0·3 centimetre or more* from the previously ascertained normal, as certainly tuberculous. Thickenings of only 0·2 centimetre he regards as doubtful reactions, and advises re-testing with a larger dose as stated above.

Joseph publishes full tables of his experimental observations showing the thickness of each animal's skin before and at stated hours after injection, the dose used, the decision regarding the presence of tuberculosis arrived at before slaughter, and the post-mortem results. Only one animal was considered a doubtful reactor before slaughter, and this proved to be tuberculous post-mortem. Joseph finally regards this case as one of positive reaction, on account of the special circumstances. Only one inspection of the animal before slaughter was possible, and this was made 48 hours after injection. The skin then showed a thicken of 0·2 centimetre, and Joseph considers that this was only the commencement of a positive reaction, which would have developed had later inspections been possible. Another animal similarly showed a thickening of 0·2 centimetres 48 hours after injection, and afterwards, further inspections being possible in this case, developed a positive reaction, which the autopsy confirmed.

Classing the above-mentioned apparently doubtful reaction as a positive one, Joseph's experiments, which comprise observations upon 126 cattle, show *only one* case in which the post-mortem results failed to confirm those of the test. Of 47 non-reacting cattle, all were found post-mortem to be free from tuberculosis. Of 79 reactors, 78 were found to be tuberculous. Joseph not unjustifiably regards the one reactor in which he failed to find lesions as really tuberculous, whether affected latently and not yet having developed anatomical lesions, or bearing lesions so slight as to escape notice.

Joseph warmly commends the intracutaneous use of tuberculin, pointing out various advantages which it possesses over the ordinary subcutaneous test. It is simpler, and is free from the inconvenience of repeated takings of the temperature. It affords the practitioner much more latitude with regard to the time of inspection. Its reaction is discernible for a longer period than that of the subcutaneous test, and it is free from some possibilities of error (such as elevations of the temperature from causes other than tuberculosis) which are insepar-

able from the older method. Its positive reaction causes no loss of milk in milch cows, which often occurs in the case of the subcutaneous test. Lastly, the small dose of tuberculin employed renders the method very economical in testing large numbers of cattle.

In addition to its value in diagnosis, Joseph thinks that the intracutaneous use of tuberculin may ultimately be found capable of assisting in prognosis. Experiments which he and Römer performed upon guinea-pigs led them to believe it possible to gain information regarding the extent of tuberculous processes in these animals by repeated quantitative determinations of the subject's susceptibility to tuberculin. Opportunities for observations upon cattle regarding this question have hitherto been scanty. The observations summarized above were undertaken to test the diagnostic value of the intra-cutaneous method, and as all the cattle were killed shortly after receiving one injection, Joseph was unable to attempt any repeated quantitative determinations of susceptibility.

He therefore does little more than mention this question for the present.—*Berliner Tierarztliche Wochenschrift.*

W. R. C.

ROYAL COUNTIES VETERINARY MEDICAL ASSOCIATION.

An ordinary general meeting was held on Friday, November 26th, at 10 Red Lion Square, W.C., the President (Mr. E. Lionel Stroud) taking the chair at 2.30. The other members and visitors present were Messrs. Jas. F. Simpson (acting hon. sec.), F. G. Samson, Percy J. Simpson, G. E. King, H. G. Simpson, A. L. Butters, Wm. Wilson, R. Roberts, W. Hunting, John Hatch, and Prof. S. Stockman, members; and Prof. H. A. Woodruff, and Messrs. Geo. Upton and Sidney E. Elphick, visitors.

The minutes of the previous meeting were confirmed.

The Late Mr A. Wheatley, F.R.C.V.S.

Mr. J. F. Simpson said that before they entered on the ordinary business of the meeting he felt that he would only be carrying out the wishes of the members in referring to the death of Mr. Albert Wheatley, of Reading, which occurred on the previous Wednesday night. Mr. Wheatley was a member of the Royal Counties Society from its inception, and he had gone through all the offices to which they had appointed him, having been a vice-president and twice a President, including the memorable year in which their Association had the honour of entertaining the National Veterinary Association. As one of the late Mr. Wheatley's oldest professional and private friends he (Mr. Simpson) would esteem it a privilege to be allowed to propose that a vote of sincere condolence be sent from that meeting to the relatives. These relatives were now few, for no man had experienced more family losses in so short a time as their late friend Mr. Wheatley. The death of his brother-in-law and his nephew (Mr. W. G. Flanagan and Mr. W. G. Flanagan, jun.), his sister (Mrs. Flanagan), and of his wife, were all recent and within the knowledge of them all. Mr. Wheatley's services to that Association and to the profession in general were very great, and they all of them always entertained the greatest respect for him, as they would for his memory. (Applause.)

Mr. G. E. King said that as one of the oldest and most intimate friends of the late Mr. Wheatley he would like to associate himself with the resolution which had been so gracefully proposed by Mr. James Simpson. Very few men had passed through so much trouble in a few years as Mr. Wheatley. He was a very eminent member of their profession, and much respected by them all, as well as by the outside public, and he was looked up to not only in his professional capacity but also as a good all-round sportsman by a very wide circle in Berkshire and the surrounding counties; and, further, he was a generous friend, always ready to open his purse when money was wanted for a good object. (Hear, hear.)

The President said he was sure that the words which had fallen from Mr. James Simpson and Mr. King would meet with the approval of every member of that Association. All who knew the late Mr. Wheatley held him in the very greatest esteem and regard. (Hear, hear.)

The resolution was carried *sub silentio*, all present standing.

It was then decided to send a wreath, appropriately inscribed; and at the request of the President, Mr. James F. Simpson undertook to officially represent the Association at the funeral.

Correspondence.

Mr. J. F. Simpson announced letters of apology for inability to attend the meeting from Messrs. E. J. Mellett owing to ill health, J. C. Coleman, whose illness prevented his attendance, Shipley, G. P. Male, James East, E. Percival Owen, F. W. Hanks and R. Porch.

Mr. Broad, of Finchley, wrote resigning membership, as his business claims precluded his attending meetings.

A letter was next read from Mrs. Wragg, expressing her thanks for the action taken by this Association in connection with the memorial fund raised as a mark of respect for her husband, the late Mr. F. W. Wragg.

Mr. Broad's resignation was accepted with an expression of regret.

New Members.

Mr. H. Standley, M.R.C.V.S., of Norwich, proposed by Mr. J. F. Simpson, seconded by Mr. P. J. Simpson.

Mr. W. S. Mulvey, F.R.C.V.S., of London, proposed by Mr. P. J. Simpson, seconded by Mr. Butters.

Mr. W. J. Moody, M.R.C.V.S., of Oxford, proposed by Mr. P. J. Simpson, seconded by Mr. G. E. King, were unanimously elected members of the Association.

The Reconstitution of the N.V.A.

Mr. J. F. Simpson submitted the letter from Prof. Gofton, and stated that every member had been furnished with a copy of the draft scheme.

Mr. J. F. Simpson, having been called upon to open the discussion, observed that as he was afraid he entertained rather a strong opinion on the question he thought it would be preferable for others with perhaps less feeling against amalgamation to first ventilate their views on the matter.

Prof. Stockman said that as he rather failed to follow the object of the proposal he would like some information, and Mr. G. H. Simpson concurred.

Mr. King asked how the funds of this Association stood?

Mr. J. F. Simpson said that with the very careful husbanding of their resources during the past seven years by past Secretaries and Treasurers he was able to boast of an annual balance to the good, averaging about £54, and last year it was £61. That was what they could manage to save out of a 10s. 6d. subscription; but if they adopted this scheme they must at once raise the subscription to a guinea, 10s. 6d. of which must be sent to the proposed Society. They would be somewhat in the position of a Parish Council, who were thought to be very great people when they were

given some sort of authority, but who at once found that they had very little control over the affairs that they were supposed to be entrusted with, and that in fact they had to refer to the District Council, who in turn had to refer to the County Council, while when in difficulty the County Council had to refer to the Local Government Board. Local societies, if this scheme were carried out, would be, in a very short time, to use a common phrase, "small potatoes."

Prof. STOCKMAN enquired as to the origin of the movement, and Mr. Wilson said he would like information as to what advantages were offered.

Mr. H. G. SIMPSON said that, in order to put the thing on a business footing, he would move :—

"That in the opinion of this meeting the suggested scheme of amalgamation of veterinary societies and reconstitution of the National Veterinary Association is undesirable."

Mr. J. F. SIMPSON observed that he knew very little more about the scheme than any other member of the Association who had taken the trouble to read it. His impression was that they now had local Societies which were all keeping their heads above water, and were of great use in different parts of the country, and the members could if they desired have all the advantages of the National Association. This proposed amalgamation, he took it, sought to supplant the National, and would take half-a-guinea apiece from every member of the local societies in order that the new Association might flourish. Whether it was likely to flourish or not was very doubtful if they considered what it was proposed to do. They proposed, first, to vote money for investigation and research. So far as he could see, those gentlemen who might be fortunate enough to be selected to receive those grants were the only ones who would be likely to receive benefit from it.

Prof. STOCKMAN : How much will they get.

Mr. SIMPSON replied that no one knew the cost of research work better than Mr. Stockman. They might devote money by hundreds of pounds to such a purpose. Let them take the Royal Veterinary College of London, which did excellent work in the way of investigations and so on ; and Prof. M'Fadyean would tell them that the hundreds of pounds they obtained annually for the purpose was not a quarter enough. He would ask Prof. Stockman his opinion as to the use of attempting to grant aids for that special purpose of less than hundreds, and where were those hundreds to come from ? There were now their local societies, doing good work, all happy, and having absolute control over their own affairs. It was claimed that they would still have control over their local affairs ; but he disagreed entirely. They were to be subservient to what the promoters of the scheme in his opinion erroneously called the branches and divisions. They were first to be under the one and then subject to the other, and the whole Council would have power to deal with them pretty well as they liked. They went further and said that not only would they give grants for investigation and research but that they would also go in for benevolence, and also for defence. Those who were now associated with the Victoria Benevolent and the National Benevolent Societies knew what good both those bodies were doing. Did they suppose that more money would be able to be spared for purposes of defence or benevolence (after grants had been made for investigation and research if that new Society were floated than was now given away by the Victoria and the National Benevolent Societies ? As to the question of defence, he did not know that one had any reason to find fault with the existing Defence Association. As an old subscriber to it he might mention that he once laid the whole circumstances of a harassing action which was brought against him before that Society, and they at once took the matter up, allowed him to select his own counsel and he won the case easily. They were not going to increase the membership of that new society except at the expense of their individual selves. Their local Associations could only keep their heads above water and hoard up a small sum towards, say, entertaining the National Association as it should be entertained when it visited their district, on the present subscriptions. Half-a-guinea, taking the country through, was the limit of the amount which nine-tenths of the members of local societies were prepared to pay annually. If they joined that proposed Society every local Association which had say 60 members, would be bound to pay 30 guineas to it annually, and that could only be done by doubling their existing subscriptions. To take his own case he (the speaker) was a member of six veterinary societies, and was it fair on him or other gentlemen who belonged to several such bodies to be called on in that way for an object which they might not consider necessary. Was it necessary ? Was the National Association so moribund, so useless, as to call for this intervention largely from outside ? He, being Treasurer of the National, had access to the books, and he found that out of the 24 active suggestions as to the reconstruction of the National 11 were not members of the Society which they claimed to have the desire and power to reconstruct. Did they ever know anything more inconsistent than that gentlemen who were not members of the National Association should endeavour to set our house in order ? Then, if the thing was going to assume the dimensions and form of the usefulness claimed, the question must strike business men of who was going to be Secretary and Treasurer ? The promoters observed that the Secretary should have assistance, and it really meant paid officials. How was all that to be met ? Was it not better to let things rest as they were ? He had never known a case of a local Veterinary Medical Association being broken up, and so far as he could see there was no diminution in the interest taken in them. Then let them suppose that this thing did not go—and in his humble opinion if it ever started it would have a very short life. Apart even from that he said that without the unanimous concurrence of members they could not reconstitute the National Association. There were many other points, but he thought, however good the intention might be of those who had drafted that scheme, he had said enough to show that it was undesirable.

Mr. WILSON, in seconding the proposition of Mr. H. G. Simpson, observed that in his opinion Mr. James Simpson's comments would fully justify them in saying that they did not propose to entertain the scheme.

Prof. STOCKMAN said his present position was that he thought he would like to oppose the scheme ; but not until he had heard every clause discussed. It seemed to have been prepared by gentlemen who had given a great deal of trouble to it, and who evidently thought there was good in it. At present he did not see what good it was going to do, but he would like discussion by those who knew more about it than he did, clause by clause.

Mr. J. F. SIMPSON added that if they began to discuss clause by clause, they would approve some and not others, but in the end—by making suggestions—they would have approved of the principle of amalgamation.

Mr. KING thought it would be hardly fair to those who brought forward the scheme to reject their proposals without a discussion. He himself had an open mind or the whole matter, and would like it to be thoroughly thrashed out.

The PRESIDENT thought they might consider it in such a way as to point out what they considered the good points in the scheme.

Mr. HUNTING thought that a crude resolution such as that before them should not be voted on without discussion. The movement, he would point out, was not

started by the gentlemen who had drawn up the suggested rules, but was started by the National Veterinary Association from within, when Prof. Macqueen was Secretary: and it fell through solely from financial difficulty. Everybody seemed then to agree that it would be a good thing if they could be more united than they were. They must understand the value of unifying, if possible, some 20 Associations, instead of having them all acting independently. He had listened to Mr. James Simpson with some astonishment. Every now and then he got hold of a fact, and managed to draw a wrong inference every time. They were all happy as they were—but might they not be happier still? At any rate they would be stronger. Than he suggested that the control of their own affairs would be taken out of their hands. Nothing of the sort: each Soeiety would be as independent as it was now. The matter of subscriptions was difficult; but that was for discussion when they went through the proposed rules. It would be better for Mr. Simpson to be a member of that amalgamation, and of one branch, and be welcome at the meetings of all the Societies to which he now belonged. Then they were not going to put the National Association into the melting pot. The National would attach the others with a friendly bond, not with any fetters, and the whole family would be united. He could not see why, because there were two or three difficulties, one was going to take objection to the whole thing. They must all allow that the more united they were, and the more *esprit de corps* there was among them, the better; and he knew of no body of men more wanting in those qualities. Yet when a struggle was being made to get those things altered they were asked not to make a start, because the whole thing was too difficult.

Prof. WOODRUFF considered that the Central, and such Associations as the Royal Counties, should act as "guides, philosophers and friends," to some of the more distant provincial societies; and that, so, the matter should be fairly well weighed at that meeting. As to grants for research, he did not agree with Mr. James Simpson. He knew something of the conditions under which men did research work; and as he had never been the recipient of a grant himself he could speak freely. He knew of no body of men who spent more out of their own pockets, and made greater sacrifices of time and endeavour, with very small assistance, than the men who conducted scientific research. Those men would not benefit themselves alone, but the whole profession would be benefitted if larger grants could be made from such an Association as was proposed. With regard to benevolence. it had always seemed to him a matter of regret that there were two Benevolent funds instead of one; and he felt that if they had one National Fund governed by the Associations, every Secretary would feel it his duty to urge the members of his Society to belong to it. With regard to defence, clearly the more united they were the better prepared they would be; and as to subscriptions, the new Society would only demand its one half-guinea from any one member. Under the proposed scheme the various societies would benefit by holding joint meetings to cover wider areas than at present.

Mr. KING said it was his impression that those who proposed that scheme had ideas in their minds of building up a new Society somewhat on the lines of the British Medical Association. He thought that if the old National Society could be broadened out, that would be a very great thing, both for the National Society and for the profession generally. If their local associations would do better work, and have more enthusiasm infused into their meetings, it would be better for them. He did not believe in hoarding up their funds, but felt that the money they had put by should be devoted to some useful purpose, such as some of the objects which were detailed in that scheme. He felt that some of the suggested rules ought to have very serious discussion before they were rejected or discarded. He did not know whether he should be in order in going into points of detail.

THE PRESIDENT said the question before the meeting was whether the scheme was good or not. If it was decided that it was good they could then go into the details.

Mr. SAMSON was not personally in favour of the scheme. One reason was that he did not think they would get members to pay a guinea; but still, in view of what had been said, he thought it should be discussed clause by clause.

Mr. J. F. SIMPSON suggested that as there appeared to be a desire on the part of certain members to go through the scheme clause by clause, the mover and seconder of the proposition might consent to voting on the motion being withheld until such discussion had taken place.

Mr. H. G. SIMPSON fully concurred in the suggestion; but a vote was taken, and the motion was carried by six against four, some members not voting.

Mr. HUNTING: It is the nastiest smack in the face of the whole of the veterinary profession that they have yet had for one Society to do this.

Mr. J. F. SIMPSON: I am sorry to hear Mr. Hunting say that. I just now said that under all the circumstances it might be better to discuss the matter clause by clause.

NEXT MEETING.

On the proposition of Mr. Butters, seconded by Mr. Wilson, it was agreed that the annual (January) meeting and dinner of the Association be held at Reading.

ELECTION OF OFFICERS.

Mr. J. F. SIMPSON explained that Major Meredith, the senior Vice-President (who would in the usual course have succeeded to the Presidential chair) wished to be relieved from office in the Association owing to his living so far away.

The PRESIDENT thought that as a vacancy was thus created the members would agree with him that they had a very nice opportunity of paying a deserved compliment to a gentleman who had done a great deal for their Association and for the profession generally; and he would therefore propose as President Mr. Percy Simpson, who had been their Secretary and Treasurer for seven years, and carried out his duties most conscientiously and to their entire satisfaction. (App.)

Mr. WILSON seconded the motion, which was supported by Messrs. Roberts and Butters, and carried by acclamation.

Mr. P. J. SIMPSON said he greatly appreciated the honour done him.

Vice-Presidents.—Messrs. SAMSON, STOCKMAN, E. L. STROUD, and E. J. MELLETT were appointed for the year.

Auditor.—Mr. BUTTERS was re-elected.

Hon. Sec. and Treasurer.—Mr. J. F. Simpson said he had very great pleasure in proposing that Mr. G. P. MALE, of Reading, be elected Hon. Sec. and Treasurer. He had no doubt that gentleman would, with his well-known energy and comparative youth, guide them to success.

Mr. Butters seconded the resolution which was heartily agreed to.

A cordial vote of thanks was passed, on the motion of Mr. Wilson, seconded by the President, to Mr. J. F. Simpson for acting as Hon. Sec. and Treasurer during the past year; and thanks to Mr. Stroud for his able conduct as President, closed the meeting.

"THE VETERINARY MEDICAL OFFICER OF HEALTH."

The discussion on the paper read at the Swindon meeting by Mr. Coleman was, on account of that gentleman's absence, adjourned till the January meeting.

WESTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

The 62nd general meeting was held at the Great Western Hotel, Taunton, on Thursday, Nov. 25th, when the President, Mr. E. W. Bovett, of Bridgwater, occupied the chair. He was supported by Messrs. Wm. Ascott, Bideford; W. H. Bloye and P. G. Bond, Plymouth; G. H. Elder and A. G. Saunders, Taunton; W. Graham Gillam, Minehead; W. P. Stableforth, Colyton; and H. E. Whitemore, Langport.

The minutes of the last meeting were read and confirmed.

Prof. Hobday, Messrs. A. J. Down, John Dunstan, G. H. Gibbings, P. Penhale, R. E. L. Penhale, C. E. Perry, G. P. Short, W. E Taylor, J. Toms, and C. E. Turvill wrote apologising for non-attendance.

Correspondence.

Frank Wragg Memorial Fund.—A letter from Mrs. Wragg, expressing her heartfelt thanks for the generous recognition of her late husband, was read.

Mrs. Baker, of Crewkerne, wrote acknowledging the vote of condolence and sympathy passed at the last meeting.

Amalgamation.—The draft scheme was carefully considered and the following recommendations made:—

Rule 1.—That the name be the National Veterinary Association (leaving out the word "Medical.")

Rule 2.—That paragraph 5 be deleted: That paragraphs 6 and 7 be made one paragraph, and the words "if funds permit," be added: That paragraph 10 be deleted.

Rule 14.—That our Hon. Sec. be requested to obtain further information as to Branches and Branch Officers, this Association being of opinion, as far as can be seen, that the same are superfluous.

Rule 16.—That this rule stand over for further consideration, and that the Hon. Sec. ascertain the minimum subscription required from each member of a Division to the National.

Rule 17.—To ascertain if 1st December (in the last paragraph) should not read 31st December, at present it contradicts Rule 10.

Rule 37.—To obtain further information as to co-option.

Rule 49.—That the words "accordance with" be substituted for the words "general obedience to."

New Member.

Mr. S. J. Motton, of Penzance, proposed at the last meeting by Mr. Bloye, seconded by Mr. Elder, was unanimously elected.

A HEALTHY MILK SUPPLY.

By W. P. Stableforth, F.R.C.V.S.

Mr. President and Gentlemen.—Our worthy Secretary has on two or three occasions asked asked me to contribute a paper to this Society, and in a weak moment I consented, but not without diffidence, well knowing my inability to perform such a task. I have selected a subject that, although a liquid, is a somewhat dry one; however, my one hope is that by creating a good discussion our memories may be refreshed and our knowledge of this important subject increased.

This question of a healthy milk supply is one of a very complex nature, and the controversies on the subject during the last 25 years have been numerous and conflicting; the difficulties to be met with are enormous.

We have two great sources from which we draw our supply: (1) Town, and (2) Country. It would not be so difficult to find a workable scheme to control the town supply provided it drew its milk from the immediate neighbourhood, but the supply often comes 150 or 200 miles to our towns, which immensely increases the obstacles of control.

It appears to be the country supply which needs the most urgent attention, for according to various statistics (given by Dr. Hope, M.O.H., for the City of Liverpool, Mr. Brittlebank, F.R.C.V.S., Veterinary Inspector for Manchester, and Prof. McLauchlan Young, of Aberdeen, *vide* published reports in *The British Medical Journal* and *The Veterinary Record*, as well as shown by heaps of systematic bacteriological examinations of the milk samples) by far the greater number which were found containing tubercle and other pathogenic organisms came from the country. These figures have shown contamination varying from 2·87 per cent. in town milk to 29·1 per cent. in that of the country.

The reason for this great difference is that in many large towns the Dairies, Cowsheds, and Milkshops Orders have been enforced, hence the City cows and shippons are inspected, with the result that the diseased cows are weeded out and any insanitary conditions remedied.

In the country and smaller towns there is no inspection of cows or cowsheds, and perhaps a sample of milk supplied to the inhabitants may be taken once in three years, therefore the producer and dairyman in the country are practically left to do as they like. With the exception of a small percentage of milk producers the majority will not admit it is necessary to improve their methods, and if one talks to them about such a thing as infection with disease-producing germs, they laugh at the idea. Antiquated ideas are an obstacle to reform. Farmers and dairymen say, when advised of the dangerous state of the dairy trade or milk production, "How is it that we have lived so long? and that our forefathers even longer, and under even more unhygienic surroundings than we do at the present day?"

Difficulties are put in the path of reform owing to the prejudice and ignorance on the part of many, and especially those who have axes to grind as landlords, farmers, dairymen, and a vast number of the members of our Councils.

I think there is a unanimous opinion among scientific men as well as with the bigger and more enlightened dairymen and farmers, and there is an urgent need for an alteration in the milk traffic of both town and country supplies. The mystery is that our Government and Councils, no matters whether conservative or liberal, allow the matter to remain in the same state year after year without putting into force the necessary reforms.

It will not be accomplished by any "*may*" restrictions and regulations, but only those of "*must.*" We want strictly enforced legislation, and until this is done all the attempts at the control or harnessing of tuberculosis (the great white plague) will be inefficient, ineffectual, and abortive. The inspection of dairies and cows, the systematic examination of milk bacteriologically, I regard as of far greater importance than the inspection of our meat supplies, from a tuberculosis point of view, as there is much more danger from ingesting milk infected with tubercle bacilli than the eating of tuberculous meat, which is usually subjected to a high temperature that probably destroys its virulence, while the milk is generally consumed in the raw state.

There is no system of inspection in this country with the exception of a few of our larger towns, who have adopted the Dairies, Cowsheds and Milkshops Orders, or applied for other special powers by Act of Parliament.

Milk and meat containing tubercle bacilli may be and is sold with impunity, prosecutions are frequent for the adulteration of milk and other foods by water, excess of preservatives etc., and heavy fines imposed; yet the authorities in this mighty England of ours, the cradle of hygiene, allow the sale of pathogenic organisms to

go on unchecked when it is a question of far greater danger than the adding of water or adulteration of foods.

Definition of a Healthy Milk.—That condition of milk when it is drawn from the healthy cow, devoid of added water, abstracted fat, excess of preservative, free from foreign suspended matter, and uncontaminated pathogenic organisms.

Analysis of Cows Milk.—Good milk is a yellowish white opaque liquid with fresh, sweetish, bland taste, sp. gr. 10·25 to 10·35. The average daily yield is about three gallons; soon after calving it may be considerably more, the quantity varies with breed, age, number of pregnancies, time since calving, food given and the period of the year. The first milk, called colostrum or beestings, has a higher Sp. gr., viz., 10·50, it is deep yellow in colour, and has a taste like beaten eggs, it is supposed to act as a natural purgative to the offspring. It should not be mixed with the other milk for at least a week after calving. There is also a vast difference in the quality of the fore milk and the last or strippings, the latter is much richer in fat.

Analysis of Good Milk.

In 100 parts.	Water	87·5	
	Lactose	4·9	
	Fat	3·6	Fat 3·6
	Casein	3·3	Solids not Fat 8·9
	Ash	0·7	Total Solids 12·5

Milk from a healthy cow is practically sterile.

Lactose or Milk Sugar.—An important and constant constituent of milk. It is the chief substance in solution in whey, and that substance which, when acted upon by the Bacillus acid lactis, forms lactic acid. When milk sours or curdles it is caused by the acid converting the alkaline phosphate of calcium into the acid phosphate, hence the casein is no longer held in solution.

Fat (Hydrocarbons) occurs in milk as suspended globules, and by the friction and heat produced in churning, these globules are ruptured and converted into butter.

Casein (Proteid or the Nitrogenous Principle) and includes albumen, lacto-protein and small quantities of globulin.

Ash (Mineral matter.) This is obtained by the careful ignition of the solids. It chemically consists of potassium, sodium, calcium, magnesium, phosphoric acid, sulphuric acid, chlorine and iron. The phosphoric acid and lime salts are present in greatest amount.

Impurities and Changes of Milk.

Impurities and changes in milk are of various kinds as physical, chemical, and bacteriological.

Physical.—These can be easily detected on examination. It may be sour, bitter, or have a distinct odour of various drugs, either given to the cow medicinally, or the milk contaminated by them, as camphor, turpentine, ether, feeding on turnips, garlic, or coming in contact with paraffin, fish, etc.

Ammonia does not affect it; it may have changes in colour due to hæmorrhagic conditions of the udder, or development in the milk of various chromogenic organisms. It is also contaminated with dirt, hair, scurf, from hands of milker, udder and flanks of cow, and dessicated and liquid particles of fæces are swished into the milk by cow's tail. This is easily seen by examining a little of the slime of separator after use, the slime separated by centrifugal force is simply indescribable; if it could be shown to the producer and consumer there would soon be a demand for properly cleansed milk.

Chemical.—The chemical change is chiefly in reaction. Ordinary milk is alkaline when freshly drawn, but owing to the development of the bacillus ac. lactis, this alkalinity is soon neutralised or converted to an acid one; if milk is decided alkaline after some hours old it may be due to the addition of carbonate of soda.

Bacteriological contamination.—To detect and examine thoroughly one needs a powerful microscope, and in the sediment or slime obtained by centrifugalisation one may find pus and blood cells, epithelial cells, moulds, algæ, as well as a multitude of organisms, some of them specific, as tubercle bacilli, staphylococci, streptococci, actinomyces, and other organisms.

Diseases conveyed by Milk.—The diseases which are transmitted by milk are of two classes:

(1) Milk borne diseases of human origin, viz., typhoid and scarlet fever, diphtheria, epidemic diarrhœa, epidemic sore throat, and measles.

(2) Diseases of the cow transmittable from animal to man, as tuberculosis, variola, anthrax, foot-and-mouth disease, and actinomycosis.

Milk is recognised as a capital medium for the conveyance of diseases from man to man and animal to man. It supplies just the food that suits them best, and when drawn from the cow before refrigeration the temperature is all they require. Some of our medical *confrères* have tried within recent years to connect scarlet and typhoid fevers, and diphtheria with some diseases of the cow, but the veterinary profession is unanimous that this idea is erroneous—bovines are not affected with these maladies, how is it possible?

Typhoid Fever (Enteric fever) has been and is often carried in the milk can, the outbreaks which have been traced to this source are numerous, some of them being very extensive. The milk is contaminated by the milkman, or more likely by the washing of dairy utensils with water containing the specific germ. An extensive outbreak of this kind is reported by Dr. D. S. Davis of Bristol.

Scarlet fever and Diphtheria, may also be spread by the milkman or milkers who may have the disease themselves or carry the infection from their homes to the milk and contaminate it from clothing or hands; when milking or handling utensils, they may have diphtheritic sore throat, and infect milk when sneezing or coughing, or by the filthy habit of many milkers of first moistening their hands with their own saliva before commencing milking.

Epidemic sore throat.—This may be caused by streptococci and suppurative organisms from the cow's udder.

Epidemic diarrhœa and thrush in young children. The former is caused by milk infected with a bacillus of the Coli type; this is the view held by Professors Delépine and M'Fadyean; and it is corroborated by Dr. Hope, M.D., M.O.H. for Liverpool, who advises that the most scrupulous attention should be paid to the artificial feeding of children.

The latter is due to a mould, Oidium albicans, which causes white specks on the mucous membrane of the mouth, fauces and lips.

Milk is a good culture medium, and infection is favoured by dirty bottles.

Tuberculosis.—It is generally thought that in order to transmit tubercle by the ingestion of milk, we must have a tuberculous udder, as the milk cannot contain the bacillus unless the lesion is actually in the mammary gland; this is true in its widest sense, but the difficulty lies in that the gland may be affected for weeks before showing clinical signs, and all the time tubercle bacilli may be poured into the mammary secretion. The percentage of tuberculous udders is fortunately small, about 2·5%, and happily the agent causes a rapid proliferation of the connective tissue, which destroys the secreting portion.

Still there is ample evidence that man is infected from this source; particularly is this so in invalids and young children, whose diet consists largely of milk, and in the case of the former whose resisting powers to

disease are weakened, this is all the more dangerous when they or their parents are believers in one cow's milk, or receive their supply from a small dairy; when there is a tuberculous udder the virus is little diluted and almost certain to produce Tabes mesenterica. The milk from a consumptive gland is extremely virulent.

Another means of infecting milk with Tubercle bacilli, although perhaps rare, is from dogs and cats with a tuberculous ulcer about the mouth, head or neck; these animals are notorious rogues, who often help themselves to milk at farms and dairies, especially during milking where the liquid is often left standing about within their reach.

Bovine variola and Foot-and-Mouth Disease may be both contracted by man by inoculation during the milking process, or by ingestion of the milk; fortunately the former is rare, and the latter stamped out in this country.

Actinomycosis of the mammary gland is inoculated by an abrasion of the mucous membrane of the mouth of the person drinking the milk, and Anthrax can be contracted in the same manner.

Collection of the Milk.

It will be a happy day for the consumer of this most valuable and indispensable of foods, when the hygienic management of the dairy side of farming is fully understood and practised by the producer; at present cows are often (especially in rural districts) housed badly, drainage and ventilation are of the worst, byres not lime-washed once or twice in a life time, generally not at all, manure removed hardly once a week, cows themselves filthy and often paddling up to their knees and hocks in their own excreta. And unfortunately this is not the worst side of the subject, the attendants are in most cases unclean themselves, often diseased, and many have the objectionable habit of moistening the cow's teats with the first milk (wet-milkers), and the writer has seen them expectorate on their hands to facilitate milking operations. These two latter habits ought to be made punishable by three months hard labour without the option of a fine.

Although milk is largely contaminated at its source, the producer must not take all the blame, for there are other channels by which deleterious products enter it, as during transit, storage, delivery, and Prof. Delépine argues, and rightly so, that milk, however pure it is handed to the consumer, will and does become infected in the house of the consumer, by means of standing near open windows where it is infected by flies and dust; an insanitary atmosphere, and lastly, by the carelessness of maids and housekeepers with respect to the cleanliness of the vessels used for its reception.

The landlords ought to be compelled to provide suitable premises for cows, for the hovels in which dairy cows are kept are a disgrace to the country. The least they can do is to provide suitable impervious floors with good drainage; the majority of the present byres are stone pitched, which allows the excretions to soak between them, the result is it is an impossibility to have a pure atmosphere, and when entering some of these *habitats*, after doors and windows have been closed for a little time, one can hardly breathe for the ammoniacal and other gases which are continually rising from the floor.

This state of affairs ought to be remedied, especially when the cowkeeper has such a faculty for keeping the doors and windows closed, and even going to the trouble of stopping any little crack with a bag or straw; the idea, which is a mistaken one, is that by keeping the cows warm he will receive a much larger proportion of fat in the milk at the least cost, or that these animals are susceptible to chills; the very fact of a close byre renders them so, and the difference in the fat percentage is so little that it does not warrant the semi-suffocation of animals by an excess of carbonic acid gas.

Points in the Construction of Cowsheds.

The ideal town cow-shed should be on the outskirts of the town, and not nearer than 100 feet to a dwelling house. If all cows were housed thus many would not be kept shut up from the time they have calved until the mammary gland ceases to secrete, a proceeding which is common in our large towns, and a most unnatural one. Nature never intended cows to be so treated; however, it is an evil which will not easily be altered, hence these buildings in towns must be constructed at the least on sanitary lines. Cowsheds situated in thickly inhabited districts, surrounded by high buildings, are certainly not properly located.

A well constructed byre should provide each animal with 800 cubic feet air space, and 20 square feet floor space; in the country the former could be reduced to 600 feet, as the animals live more in the open, and in the South West of England live in the open most of the year ronnd, and are turned to grass some portion of the day all the year. Generally, cows are tethered in pairs, if so they require stalls 7 feet in length and 7 feet wide. It is essential to keep the stalls as short as possible or the cows will be lying in their own excreta, hence soiling their udders and quarters: for the same reason single stalls are preferable, and the divisions between stalls should not be less than 4 feet high. Running behind the cows the whole length of the building is a manure channel, often called a Grip, which must not be too narrow—not less than 18 inches wide and about 6 inches deep, this gutter must have a gradual slope from the higher end of the building to the outlet; if made too narrow the excretions will dam the grip, and fluids will accumulate in ponds. Every shed ought to be cleaned out twice a day.

There should be a forebay of about 4 feet wide, otherwise the cows will be tied up with their noses close to the wall, thus re-inhaling a good portion of their expired air.

Feeding troughs.—These should be of glazed stone ware, or well and smoothly cemented, constructed without corners in which food can accumulate.

Floors should be impervious, as concrete, or channelled bricks laid in cement, with surface channels running into the grip behind. Flagged and stone floors are unsuitable owing to the many joints.

An abundant water supply should be provided within the byre, with a hore for flushing purposes. It is difficult to get employees to carry water for such purposes. There must on no consideration be a gully or drain trap within the building, the bef re-mentioned grip should run straight outside, emptying into a trapped drain outside the shed; this trap should be ventilated on the drain side of the trap with a pipe the size of the one it ventilates: this may run into an intercepting chamber outside the dairying premises, or into a main sewer (in towns); if the former it is emptied at frequent intervals.

The walls should be smooth inside, and if not plastered with cement to full height, should be so treated for about 6 feet from the ground. A level smooth surface is more easily cleansed and disinfected than a rugged one.

Ventilation.—Best to provide for inlet by windows and ground ventilators, and outlet by Louvre boards in the ridge, or by extraction tubes, to be regulated by wind velocity, etc. The cowkeeper likes to keep the temperature high—about 65 F., but if kept as near to 60 F. as possible it is favourable to milk production and more healthy for the cows.

Lighting.—Here, again, the cowkeeper has an objection. He is under the illusion that too much light retards the production of milk and prevents the animal

gaining in condition. After the animals have become accustomed to plenty of light and housing in airy byres they are better in every respect. It is well to allow 3 square feet of window space for each cow; they should be made to open on bottom hinges and placed in side walls; they can be used as air inlets if properly made, or if ventilation is provided for, the lights answer very well in the roof.

Water supply.—All cows require plenty of good fresh water, free from pollution by sewage; they are often allowed to drink from ponds in yards which receive the surfaca drainage of the cowsheds, these are harbours of filth of every description, in fact are nothing but cesspools.

The writer has seen in more modern buildings a constant fresh stream of water running through the byres at the head of the stalls; this is a good plan but for the danger of spreading disease, especially should the upper cows have tuberculosis or actinomycosis.

Manure heaps (often placed as close to the cowshed doors as possible, or even next to the dairy) must be removed as far as possible to prevent pollution of the air of the byres.

If possible, and space will permit, milking sheds ought to be provided and used only for this operation, or cows should be milked in the open when weather will permit. Cows should be groomed daily, and milk glands washed prior to milking, but I am afraid this will never be done universally; it is often performed inadequately, the udder being in a worse state than before unless it is done by a reliable attendant—and the nnmber of these is few.

That cleansing of cows prior to milking lessens the number of bacteria in the milk there can be no two opinions, which the following experiment shows clearly.

Professor H. L. Russell (Dairy Bacteriology, page 28) took a cow pastured in a meadow for an experiment, and milked out of doors, to eliminate as much as possible the germ life in the barn air.

(1) Without any special precautions the animal was partially milked and during the process a covered glass dish, with a thin layer of sterile gelatine, was exposed for one minute underneath the abdomen of the cow close to the milking pail.

(2) The udder, flanks and legs were thoroughly cleaned with water and milking resumed. A second plate of sterile gelatine, in the same position for an equal length of time was exposed.

(3) A control plate of sterile gelatine was exposed at a distance of 10ft. from the cow and 6ft. from the ground, to find the germ life of the surrounding air, with the following results:

(1) Without any precautions there were 3,250 bacteria per minute deposited on an area equal to the surface of the top of a ten inch pail.

(2) After precautionary measures the number fell to only 115 germs per minute, and the surrounding air deposited 65 organisms per minute.

If this quantity is deposited outdoors it is probable the case would be far worse if the milking had been performed in the byre.

It is desirable that the first milk drawn from the gland be milked on the ground, as it contains a large number of organisms, many of which have been developing in the teat since the last milking. The protection it afforded them, the pabulum supplied, also the temperature of the milk practically gives them the same conditions as an incubator. The milkers must have clean hands and overalls (the latter clean at least twice a week) should be free from any chronic wasting, infectious or contagious disease.

If any diseased udders they will be attended to last, or better still by a separate person; the milk of course will not be mixed with that from the healthy cows.

Milking machines are a hygienic method of obtaining the milk, and when perfected have much in their favour, provided they are kept scrupulously clean, also the cows udder and all surroundings made as clean as possible. By this method much of the dirt and deleterious matter is prevented. They are in use in many large dairy farms, and I think are proving a success.

It is during the milking operation that there is room for a most important reform in dairy work; immediately the milk has been extracted it should be strained through one of the improved modern strainers, or, better still, cleansed by upward filtration under pressure, to remove hair and all the larger particles of dirt which will have entered the liquid. It should then be at once run over a refrigerator and cooled to its lowest possible point with the water supply on the premises. It is unsatisfactory to lower it into wells, also to stand the railway cans in tubs; the only effectual way is to run the milk in a thin stream over the refrigerator, and the latter should be a covered one or dust is bound to be blown into it. The temperature of the water is best at 54 F. or as much lower as possible, this will have a retarding effect on the bacteria that have gained access to the milk. If milk is not cooled quickly its temperature is very favourable to their development and they do develop rapidly. Milk that is put on rail uncooled will at its destination have, in hot weather, butter particles floating on its surface.

All dairy farms must have an abundant pure supply of cold and boiling water; if the water is contaminated with sewage the tins and milk will also be contaminated. The dairy utensils immediately after use should be thoroughly rinsed out with cold water and then boiling water and put over a steam jet for a few minutes if possible, then placed inverted in a cool sweet place, well removed from manure heaps and piggeries.

Milk in Transit.—Many people are under an erroneous impression that milk loses its quality in transit and they would prefer milk delivered direct from the farm. Milk may lose its quality during the railway journey, but only when someone helps themselves to the cream—the writer would most certainly prefer it when it has been cooled and cleansed in one of our modern dairies. The churns used for transit should have perfect fitting locked covers, one that fits over the top, not into it, the dirt, dust etc., which must be deposited on the covers, cannot then be washed into the milk by rain, or by milk that has splashed on to the cover during the removal from cart to platform and platform to milk vans. These vans should be well ventilated, airy, non-conductors, and, where possible, only used for milk. All stations ought to be provided with covered sheds where milk can be deposited when any delay occurs. It is useless to refrigerate at the farms if the milk is allowed to stay for hours in the hot sun of a station platform.

The Cleansing of Milk.—After it has arrived at the premises of the retailer, it is subjected to various conditions of sanitary surroundings, from the up to date model working dairy to the little dealer who perhaps only retails half a dozen gallons a day—it is exposed to a variety of articles in these little "general" shops. This state of affairs is being stopped by degrees. A dairy shop should only be used for what its name implies, the sale of butter, milk, cream, cheese, eggs, etc., and not the hundred and one things found in many of these so-called dairies. The Dairies, Cowsheds, and Milkshops Orders have done much to improve this class of premises, but unfortunately they have not been adopted in all districts, hence milk vendors in many parts can use almost any place for a dairy, provided the defects are not too glaring.

A dairy or milk store must have perfect sanitary surroundings and be well away from the byres, stables, etc., also, if attached to a dwelling house, well away from the living portion. Drainage, lighting, ventilation, cleansing, water supply (hot and cold) well arranged, and if

the Dairies, Cowsheds, and Milkshops Orders are enforced, these conditions will be provided.

Milk as soon as it arrives should be immediately recooled by means of a refrigerating machine such as "Pupletts" or other ammonia or carbonic acid gas machines, by these means large supplies can be readily dealt with, a temperature of 40 F. is easily obtained, and the freezing point or lower if necessary. Were it not for the present cold storage systems it would be impossible to deal with the milk traffic in large towns in a satisfactory manner without enormous loss to all concerned. It is also either refiltered through a very fine mesh and thin sheets of sterile cotton wool, which removes all the finer particles, or passed through a centrifugal machine which removes any suspended matter with a heavier specific gravity than the milk.

The great secret of a healthy milk supply is cleanliness at all stages. No amount of care by the retailer will remedy any laxity on the part of the producer. There are other processes to which milk may be subjected before delivery to the consumer, as sterilization, Pasteurization, and addition of preservatives.

Sterilization.—This means is its fullest sense milk freed from all bacterial life—not only the organisms themselves, but also their spores. By a heating process the milk is exposed to a temperature above boiling point. The method employed is as follows: After the bottles have been properly cleansed and heated from ten to fifteen minutes in the steam sterilizer at a temperature above 212 degrees Fahr. the forewarmed milk (which has been warmed to incite the development of any spores into the more mature organism) is bottled, and the air tight stoppers fitted loosely on the mouth of the same. The filled bottles are then subjected to a temperature of 212 to 216 F. and maintained at that point for 40 minutes, the stoppers are immediately closed while the bottles are yet in the sterile vapour, and then cooled as expeditiously as possible to 40 F. Care is required here, or the breakage in bottles will be great. Milk thus treated will keep for weeks or months in a sweet and wholesome condition provided the stoppers are not tampered with. The great objection to this process is that the product is altered in composition, it is boiled, hence possesses a flavour which to many is unpalatable; and to invalids and young children it is somewhat indigestible. It is a good means of carrying milk on long journeys and sea voyages.

Pasteurization.—This is effected in order to kill the germs of disease commonly conveyed by milk, and happily most of the pathogenic organisms are destroyed at a comparatively low temperature, there is no fixed temperature except that it must be above the thermal death point of these bacteria and not reach the boiling point; the best temperature is 167 to 185° F. This is well above the average death point, and the time of exposure is about 20 minutes. It is then immediately bottled (in sterile bottles) to prevent further infection, and will keep good for a considerable time longer than if it had not been so treated; the milk has not a boiled taste, is not altered in composition, and is as palatable as ordinary milk.

Preservatives in Milk.—Milk can also be preserved by various chemicals as borax, formaldehyde, salicylic acid, etc., the addition of which the law allows, provided the quantity is not injurious to the consumer; the most common is the former, and the law allows ·4 grain to the litre of milk, and according to Messrs. S. Rideal and A. G. R. Foulerton who have concluded from a number of experiments that boracic acid 1 in 2,000, and formaldehyde 1 in 50,000 are effective preservatives of milk for 24 hours, that these quantities have no ill effects on digestion, or the digestibility of foods preserved by them. (Public Health 1899, p. 554-568.)

Delivery to the Consumer,—It is of little use to take all the precaution here set out to obtain a healthy supply unless attention is paid to the means of delivery. The milkman ought to know the meaning of the word cleanliness, and have the commonsense to put it into practice; they must be clean themselves and the utensils they use on the round also clean. It is rather objectionable to see the man produce the measure (with which he ladles out the milk) from his pocket—which can be observed any day if one will take trouble to watch the milkman on his round. The method of milk delivery by hand cans is very faulty. At every door the cover is removed and the milk exposed to a variety of germ laden atmospheres, exposed to showers of dust on windy days, which may contain the fine particles of dessicated sputum from a tuberculous subject, and last, and not by any means the least, in wet weather the rain actually drips from the milkman's hat brim and sleeves, articles in contact with his body, hence may be a direct means of conveying infection of human origin to the milk. There is a remedy to these objections, viz., let the milk be distributed only in wide-mouthed bottles (½ pint, pint, and quarts) sealed with a species of cardboard corks that swell to fill mouth of bottle. These covers are only used once. The milk thus protected can be handed direct to the consumer. It is a more costly process, what with preparation and breakages, but the public receive a better and purer article. Why not pay a slight increase in the price for it?

The writer is of the opinion that all milk vendors who cannot or rather will not subject milk so the various necessary processes for the prevention of disease should not be allowed to carry on the trade, or be compelled to purchase (wholesale) the milk from the larger firms who will. Lastly, after the public have received their supply they ought to take the trouble to protect it.

An essay of this description would be incomplete without some reference to the law in its relation to the milk traffic; still to go thoroughly into the matter would constitute a paper in itself.

In my opinion the inspection of the meat and milk trades and the contagious diseases of animals should be under one inspector for each district or town—that is a a veterinary officer attached to every local authority and somewhat under the control of a central one. Should a district be too small to allow of an inspector devoting his whole time to this duty, I would allow two or three authorities to combine in obtaining the services of a veterinary surgeon. It is not wise to have an inspector engaged in private practice, his hands are tied to a certain extent owing to the prejudice of his clients; it is also unfair to any local opponent of the man who may be appointed. If the official devotes his whole time he is independent and free. These inspectors should have a special training, and it is hoped before many months that the Royal College of Veterinary Surgeons will institute a new degree stamping its graduate with a mark that he is equipped for Public Health work. Of late years we have heard in the profession much dissatisfaction that the veterinary officer should have to send his reports through the M.O.H. The writer can see nothing *infra dig.* in this. For after all veterinary inspection is only a small branch of Public Health work, and there must be a head of the Public Health Department: who is more qualified to act thus, the M.O.H. or the veterinary inspector? Surely not the latter.

Tuberculosis should be scheduled as a contagious disease, and then the Tuberculin test applied to all dairy cows, the clinically diseased and those with tuberculosis of the udder destroyed, and a small compensation paid, the re-actors not showing any clinical symptoms to be isolated, fatted as quickly as possible and then the veterinary meat inspector would decide what portion of the carcase should be confiscated.

Some writers advocate that after the application of the tuberculin test to *all* cattle, the re-actors be branded and destroyed. This would mean the absolute waste

of much valuable food, for it has not yet been proved that the flesh of cattle is dangerous unless the disease has become generalised, or unless one consumes local lesions.

The inspector should have power to apply the test without the consent of the owner, and tuberculin should be only in the hands of veterinary surgeons or Public Health authorities. This would stop its abuse, and the bringing of a reliable diagnostic test into dispute.

Lastly, there should be compulsory notification by owners and veterinary surgeons of all cows showing clinical signs of tuberculosis, as well as all diseases of the udder, when the veterinary inspector would diagnose the case, take the necessary samples of milk, and submit them to an expert bacteriologist for examination.

The new Milk and Dairies Bill in conjunction with the Tuberculosis Order, which was to have come into force in January, 1910, would have done much good, and would have immensely improved the milk and meat supplies, but unfortunately both have been withdrawn, and I am afraid, owing to the present Budget, an approaching general election, and the time it takes a new Parliament to forget its differences and settle down to real work, another two or three years will elapse before they have time to consider cows or their produce.

Discussion.

Mr. Elder: Mr. Stableforth, I should be very ungrateful if I did not rise to thank you for bringing forward such an excellent paper. The Budget and the House of Lords are insignificant questions when compared with the vast importance of a healthy milk supply. Methods for improvement could be introduced, but unfortunately those do not rest entirely with the veterinary surgeon. Farmers at their clubs will say that the question is being agitated for the benefit of veterinary surgeons, in the same way as they did with regard to our proposed new Act. I have seen rlmost everything mentioned by Mr. Stableforth practised in this town.

In my opinion it is far more important that cows should be groomed than horses; to mention one reason, the udders are frequently covered with after-calving discharges; but to carry out to perfection all the improvements the paper suggests will, I am afraid, take a long time, but we must keep pegging away at the subject.

I quite agree that veterinary surgeons in private practice in country districts are badly handicapped with regard to the question of inspection. Meat inspection is different, and is much more easily arranged.

Mr. Gillam: I congratulate Mr. Stableforth on giving us one of the best papers we have ever had: he leaves very little room for criticism. The small town from which I come was one of the first to adopt the Dairies and Milk Shops Order, and my appointment as Inspector is one that I owe to our Medical Officer of Health. I quite agree that scarlet fever is milk-borne; as proof I know of a case in my district which we traced to its source. There was scarlet fever at the first house at which the milkman called on his round, and from there the infection spread.

Diseases other than tuberculosis are directly caused by milk from diseased cows. When I was first appointed I was asked to investigate with the medical officer an epidemic of sore throats; we found it was confined to one milk round. On inspection we found 12 cows being milked, but there was nothing wrong with either of them. The next day I again visited the farm, and discovered that another cow was being milked, which had been isolated in a shed some distance away: this cow was suffering from a bad case of mammitis. Swabs taken from her revealed bacilli identical with those taken from persons affected with the sore throats, and this I think was conclusive evidence.

I should like to have heard more about the inspection of dairies outside the Urban districts. At present Urban district inspectors have no power to go outside their own districts, although fortunately I am able to do so in my district through the courtesy of the farmers and dairymen, they always seem pleased to see me. The weak point in our present regulations is that we cannot prevent milk from diseased cows being sold, unless a specific case of disease can be proved to have been caused by such milk. After Counsel's opinion had been taken on the matter, I wrote Mr. John Burns, pointing out this weakness, and as a result, in the proposed new Act, he has added after the word caused "or is likely to be caused." This is a great advance.

Mr. Whitemore: Only the sheds in my district are inspected by the Sanitary Inspector and not the animals. Mr. Stableforth did not mention anything about butter being liable to contamination. In one dairy I visited recently there was a collection of all kinds of filth, harness hanging about, pig's meat in another corner, and fowls continually running in and out.

I inspected some cows recently where there had been an outbreak of diphtheria, but I could not find anything wrong with them. Some cases are said to have been traced to ulcerations on the cow's teats, but the organisms present were the result of outside contamination, *e.g.* the milker.

Mr. Bond: Our thanks are certainly due to Mr. Stableforth; he has taken a great deal of trouble with his facts and statistics, and the paper is pitched in a very high tone. I hope we shall all live to see the day when most, if not all, of his recommendations are adopted. I sometimes think the day is rapidly approaching when all the small dairies will be swamped out by the big ones. These big dairies have electric light, plentiful supplies of hot and cold water, regular visits from their own veterinary surgeons and medical officers, to say nothing of special hospitals for sick cows. Twenty-five years ago there were at least 150 small dairies in Plymouth, but now there are scarcely any; they have been replaced by big dairies, each milking 70, 120, to 400 cows. I understand one dairy company is even contemplating constructing its own private railway between the farms to facilitate collection, and to avoid repeated handling of the milk.

Mr. Stableforth said that owing to the colustrum, milk should not be used for a week after calving. I'm sure there are very few in all England, certainly not 5 per cent., who wait so long; for my own part I do not see any harm in using it after the evening of the third day, and I always so advise.

With regard to the modern floors, paved with brick or concrete, these are now generally bare, and I often wonder how much urine splashes into the milk pail when the cow makes water, in this respect the old time plan had its advantages, for then there was always a foot or so of clean wheaten straw under the cow which prevented the urine from splashing, but you don't see this now in the swell dairies. With reference to the filthy habit of spitting on the hands when milking, Mr. Stableforth says he has seen it, Mr. Elder says he has seen it, but I'm glad to say I don't see it, and shall not be in a hurry to condemn the milkers. Filthy jugs handed out by people buying milk are very common.

There is one other question I should like to ask Mr. Stableforth. Does he know of a case of anthrax contracted by drinking milk?

With regard to ventilation. We put our outlets as near the roof as possible, using wide narrow windows close to the ceiling instead of on a level with the cows. Cows certainly do not want to look out of windows, and windows are better high up for ventilation purposes. I think the extravagant idea of the number of cubic feet required, per cow, is quite exploded.

Mr. Bloye: I have very little to add except to ask Mr. Stableforth to accept our congratulations. As Mr.

Gillam says he has given us one of the very best papers we have ever had, and has set a high ideal towards which we should all aim. He is absolutely correct in saying that more diseases are caused and carried by milk than by meat. The poor cow gets a deal of blame; medical men accuse her not only of conveying her own diseases (which is probably right), but also of others which have nothing to do with her—being only milk-borne. A writer in *The British Medical Journal* some time ago accused the cow of producing scarlatina, and in face of clear proof to the contrary, has recently repeated the accusation within the last month or so. Mr. Stableforth's facts, if widely distributed, would do much to dispel this erroneous idea. I cannot help thinking that all diseases of the cow's udder should be made notifiable. When this stage is reached probably whole time inspectors will be required.

Mr. Ascott: Speaking as Hon. Secretary, it is of course not necessary for me to say much in the way of thanking Mr. Stableforth for his paper. He knows so much, I am sure, of secretarial work himself that he will need no words of mine to express my gratitude to him for giving us a paper of any sort, but when to this is added such excellence, as previous speakers have testified, my thanks are still more especially due to him. There is one fault in the present regulations with regard to the inspection of milk and dairies to which I should like to call attention, as I think it of such importance that steps ought to be taken to remedy it in the legislation we are promised in the near future. I allude to the clause which exempts farmers who only supply their labourers and neighbours as a matter of convenience from having their milk tested or their dairies inspected. In my district the subject was recently brought before the Rural District Council, when the farmers said that rather than submit to the annoyance of inspection they would refuse to supply even their labourers, prefering to give the milk to the calves and pigs. This would manifestly be very hard on the labourers and their children, and I suggest this clause ought to be struck out altsgether, and that every person who keeps a cow should submit to the same regulations as dairymen. The labourer's children should certainly be protected quite as much as any others.

The President: Mr. Stableforth's is a paper which I am sure we shall all wish to read and digest when we see in print. With regard to the point raised as to the milk of cows suffering from anthrax conveying the disease, I may mention that I recently investigated an outbreak of anthrax in a herd of 7 cows which were running with their calves. Three of the cows died, and certainly one if not more of the others were suffering from the disease, but recovered. None of the calves contracted the disease, and if the milk was infected one would have expeeted them to have suffered.

Mr. Stableforth: In reply to Mr. Gillam, I purposely did not go into the regulations affecting the milk traffic, as one could easily write for hours on the subject, which was worthy of a paper in itself.

Mr. Whitemore has said the sanitary inspector was doing the work of inspecting cowsheds in his district. This I have no great objection to provided he is qualified, and further knows his work, but where these duties are carried out by broken down farmers, plumbers, ex-Army men, etc., inspection is a fiasco. It is is even so in the hands of many medical officers, who will pass almost any arrangement provided it is well smothered in white-wash. I know a district where only a few weeks ago the medical officer, in his report, said the cowsheds of the district were in a highly satisfactory state. I personally know most of the byres in question, and consider none satisfactory, for they all had stone pitched floors, and the drainage and construction are of the worst. With regard to Mr. Whitemore's question "Did I think butter would be likely to contain tubercle bacilli," I would answer an emphatic "Yes." This, I think, has been proved; it is also likely that all milk products coming from tuberculous cows would contain the bacillus of tuberculosis.

Mr. Bond said in his district the smaller dairyman was rapidly disappearing. This is for the better, and was due to the competition of the larger firms, who had the necessary plant for cleansing milk, and cold storage which saved tremendous losses in hot summer weather. I quite agree with Mr. Bond that colostrum is mixed with the bulk of the milk after the second milking, and I know many think it a great luxury for making puddings and custards. This they are at liberty to do provided they do not put it in the milk can and sell it as milk, which it certainly is not.

Mr. Bond somewhat questions my statement re the milkers expectorating on their hands to facilitate milking operations. This I adhere to, for I have repeatedly seen the filthy habit practised, and have felt inclined to kick over the vessel containing the milk. Milkers are not sufficiently cleanly in their work. They are not angels.

Respecting his remarks re ventilation, I think it a mistake to have the inlets too high. The cold air certainly falls after it enters the building but is rapidly warmed and rises again, and without inlets reasonably low there is no ground ventilation; the air becomes stagnant at the lower part of the building.

In reply to his last question, "Did I ever know the death of anyone caused by drinking milk from a cow affected with anthrax," I cannot say I have, but certainly think it possible: you have only to have rupture of the capillaries of the mammary gland to have the bacilli in the milk, and considering the tendency to capillary engorgement and rupture in anthrax, this was not difficult. I know it is the general opinion that there is little or no milk secreted in anthrax, but this opinion I very much question, for I have seen at the least one animal dead of the disease from which one could easily have taken 2 to 3 pinis of hæmorrhagic stained milk. If a person can be infected by eating anthrax flesh, the same applied to the ingestion of anthrax milk, which was not boiled before use.

I agree with Mr. Bloye that the cow has often to bear responsibility for the spread of disease that she is not guilty of. This was so in the oft-quoted Hendon disease and even this last summer certain medical officers were endeavouring to bring a further bill against her. I think it would be wise if these gentleman would seek the advice of some of our leading veterinary pathologists or bacteriologists, where they were having their consultations. They would often be prevented from falling into error. This is also a strong argument for the attachment of a veterinary officer to every public health authority.

Respecting the case quoted by our worthy President re the calves sucking cows suffering from anthrax, it would have been interesting to know if the milk contained anthrax bacilli.

Mr. Bloye: Mr. President, I quite forgot to mention that when we were in Holland I noticed a plan very prevalent in the cowsheds there for preventing the milk being fouled by the tails swishing about during milking operations. A long rope was stretched from end to end of the sheds, and to this all the cows' tails were loosely suspended. Many other arrangements in the cowsheds there are far from ideal, but this struck me as rather a good plan.

A hearty vote of thanks to Mr. Stableforth, proposed by the President, seconded by Mr. Ascott, concluded the meeting.

Wm. Ascott, Hon. Sec.

DISEASES OF ANIMALS ACTS 1894 TO 1903, SUMMARY OF RETURNS.

Period.	Anthrax.		Foot-and-Mouth Disease.		Glanders (including Farcy)		Counties Affected	Sheep Scab.	Swine Fever.	
	Out-breaks	Animals.	Out-breaks	Animals.	Out-breaks	Animals.	Animals Attacked	Out-breaks	Out-breaks.	Slaugh. tered *
GT. BRITAIN. Week ended Dec. 4	47	43			9	23	Essex 1	31	29	139
Corresponding week in 1908 ...	27	30			13	24		23	30	214
Corresponding week in 1907 ...	21	45			16	33	London 12	44	21	100
Corresponding week in 1906 ...	10	17			21	37		22	35	160
							Middlesex 2			
Total for 49 weeks, 1909	1228	1599			522	1733	Surrey 7	592	1575	13730
Corresponding period in 1908 ...	1040	1345	3	112	754	2339		755	1965	12918
Corresponding period in 1907 ...	1009	1372			810	1828	M'Lothin. 1	594	2250	10784
Corresponding period in 1906 ...	871	1231			1033	1952		447	1163	6677

Board of Agriculture and Fisheries, Dec. 7, 1909.

							Parasitic Mange			
IRELAND. Week ended Nov. 27	...	...	...	...	...	...	1	11	...	...
Corresponding Week in 1908 ...	...	...	...	...	...	...	2	6	...	15
Corresponding Week in 1907 ...	...	...	...	...	...	...	...	6	1	51
Corresponding Week in 1906 ...	...	...	...	...	...	...	2	9	...	12
Total for 48 weeks, 1909 ...		8	8	...	...	...	... 71		87	1562
Corresponding period in 1908 ...	7	7	10	...	...	...	... 38		155	3563
Corresponding period in 1907 ...	3	3	5	...	...	5	10 72		144	2632
Corresponding period in 1906 ...	4	4	8	...	...	8	16 80		91	983

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, Dec. 1, 1909.

NOTE.—The figures for the Current Year are approximate only. * As Diseased or Exposed to Infection

Uniformity of Meat Inspection.

Veterinary Officers of Health are to be congratulated on having raised the important question of the necessity for fixing a standard of meat inspection. Along with this they have coupled the need for strengthening the Local Government Board by including in its members a qualified member of the veterinary profession. The leader in this movement is Mr. A. M. Trotter, M.R.C.V.S. Glasgow, and it need not be denied that many a man is more popular among a certain class. This may be due partly to his manner of discharging duty—but it is much more likely to be due wholly to the character of the duties which he is called on to perform. No man has had fuller opportunities for seeing the defects of the present system of meat inspection. Seeing that there is no standard by which to judge whether a carcase should or should not be seized and destroyed, it is obvious that the personal equation must count for much. There are districts into which cattle can be sold which would not be presented in the Glasgow abattoirs. In these outlying burghs the rejected of Glasgow is passed, and meat which would be condemned in Glasgow is considered good enough for the dwellers in these unfortunate localities.

Such a condition of things would take end were there steps taken "to standardise all conditions which render meat unsuitable for human food." But as Dr. Gillespie pointed out at the Highland Board, this in itself would not be sufficient. There would require to be thoroughly qualified meat inspectors appointed to carry out the standard tests, and without these the present condition of things might as well continue in force. A change along the lines contemplated by Mr. Trotter will not be carried into effect without the addition of some qualified person to the present staff of the Local Government Board. If those who wish to place further control in the hands of the Secretary for Scotland would only consider the utter ineptness of the present administration of the Local Government Board they would cease their campaign. Who may constitute the existing Local Government Board is unknown to us, but it is the case that some of these Boards are only Boards in name. Their members never meet, and the "Board" simply means what one permanent official cares to ordain. The prayer of the veterinary surgeons should be supported by all the agricultural societies in Scotland.—*Scottish Farmer.*

Personal.

Mr. T. DUNLOP YOUNG, M.R.C.V.S., was appointed Chief Meat Inspector to the Corporation at a salary of £450 rising to £600 per annum, at the meeting of the Court of Common Council, held on 2nd inst., the Lord Mayor presiding. Owing to his being presently in charge of Islington Cattle Market, Mr. Young will not take over the duties at the Central Markets probably until February, but arrangements have been made with Mr. Terrett which will enable the work to be carried on as usual.

Mr. FREDERICK LOW, M.R.C.V.S., of St. Giles Street, Norwich, for many years hon. surgeon to the Norfolk Agricultural Association and the Christmas Show Association, who died on August 12, aged 64, left estate valued at £11,968 gross, with net personality £5,660.

OBITUARY.

JOHN DAVY OVERED, M.R.C.V.S., Gt. Yarmouth.
Graduated, Lond: April, 1863.

Mr. Overed died on Dec. 1, from heart disease. Aged 74 years.

GEORGE BONE, M.R.C.V.S., Petersfield, Hants.
Lond: Dec., 1870.

Mr. Bone's death occurred on Dec. 5. from chronic nephritis. He was 60 years of age.

J. C. LONG, V.S., Lower Oxford Street, Swansea.

Death took place on Dec. 1, from senile decay, at the age of 87 years.

SWINE FEVER.

Sir,

This disease has been a source of great loss to the country for many years, and to the lay mind studying the reports of the B. of A. appears to be as far off extermination as at any period during the last few years. The cost of carrying out the various orders of the Board is enormous, and the worry and anxiety as well as expense caused to many persons by prosecutions, through ignorance, thoughtlessness, and negligence, omitting actual defiance of the regulations, is very great. The stamping-out method has failed, and is too costly to carry out in its entirety.

The writer suggests that instead of slaughtering a portion of the herd and leaving others alive, which means sources of infection remaining in many centres, isolation farms or buildings, one or two in each county, should be established or rented in places suitably isolated.

When an outbreak occurs all the pigs should be purchased, the apparently healthy at market value and the diseased at half or quarter value. They should then be at once removed to the isolation farm under proper precautions, and immunised or treated with sero-vaccination, and fed for the butcher. The size of the piggeries could be kept down by sizing up the pigs and keeping them in yards or fenced paddocks. No breeding should be carried on, but pregnant sows farrowed down before fatting, and the young run on for pork.

Much valuable information could thus be obtained, and the vexed question of how long a pig may distribute infection after recovery could soon be determined. The great advantage of this method would be in the immediate removal of many sources of infection to one place under control.

The sources of infection would be better discovered by going the whole hog and making an order that all pigs dying or slaughtered during illness over six weeks old should be reported as at present, or a certificate as to the cause of death be obtained from a duly qualified veterinary surgeon, who should forward same to the B. of A. and send a duplicate to the Police; the Board to pay for the post-mortem and certificate.

WM. T. D. BROAD.

UNQUALIFIED ASSISTANTS.

Sir,

May I again fill some little space by commenting upon two of the three letters regarding this subject which I see in the current *Record*. That signed "Amused" will not detain me long. "Amused" informs us of a case which looks like one of not only employing an unqualified assistant, but covering him as well. Undertakings to discontinue have been given and not kept. Granting that the facts are, and *can be proved to be*, as stated, my serious advice would be to bring the case forward again, and the veterinary surgeon inculpated would find it no laughing matter. Continued violation of undertakings to the Council could only have one ending.

But if I had not previously adopted another *nom de plume* I should feel inclined to sign myself "Amused" when commenting upon the epistle of that other correspondent who adopts the imposing title of "Audi alteram partem." This person seems to have a covert partiality for unqualified assistants, and at the same time—this is the one sign of grace in him—to shrink from saying so very openly. So he says little in their behalf, and that little is said somewhat guardedly—perhaps he knows that nothing effective can be said for them—and the main portion of his letter attempts to divert our attention from them by the device of drawing a red herring across their trail. The device is old, and often effectual when dextersusly performed; but the present attempt is pitiable in its clumsiness.

I will confine myself to one portion—the main one—of this fatuous letter. The rest, or most of it, can wait until its author has produced another really worthy of being taken seriously, which the present composition certainly is not. Rather more than half the epistle is devoted to a querulous and absolutely misleading exposition of the evils of soliciting. Now, in the first place, the question of soliciting has nothing whatever to do with the question of whether the time is not ripe for the extermination of unqualified assistants. In the second place, soliciting does *not*—as your correspondent apparently believes, or would have us believe—flourish amongst us *unchecked*. He says "It is not considered *infra dig.* for the veterinary surgeon to call on every firm in a city and ask as a favour for the shoeing and treatment of the horses," and elsewhere he speaks of personal canvassing of other men's clients as being "freely indulged in with impunity." Not when it is found out. Your correspondent ought to know, if he does not know, that a veterinary surgeon *proved* guilty of such practices goes off the Register. The most charitable supposition is that your correspondent knows nothing of what the profession of which he is a member has been doing *even during the last twelve months*. Let him read the report of *last January's* Council meeting (*Veterinary Record*, January 16th, 1909) and there, on page 469, he will see what happens to a convicted solicitor of other men's clients. Then, perhaps, he will draft his next oblique apology for the existence of unqualified assistants a little more carefully.

His last one has already detained me too long—otherwise there there some points in it deliciously tempting to an opponent's criticism. What could be more ridiculous, for instance, than to bring forward the unreliability of *some* qualified assistants (even your correspondent admits that reliable ones are to be found) as an excuse for employing the unqualified? I earnestly hope that your correspondent will continue the discussion—his further utterances may amuse the more sensible of your readers, and are not likely to damage anybody except the unqualified assistants he desires to befriend.—Yours faithfully,

"LONDON PRACTITIONER."

Sir,

I have read with interest the various letters under the above heading. My experiences may be not uninteresting to the profession; my practice is a pretty extensive country one. On the death of my father some few years ago, I was forced to take an assistant. I had in the space of two years eight qualified assistants. With the exception of one, who thought his services were indispensable and informed me he could not see his way clear to stop unless I gave him six guineas a week in addition to his board and lodging, I must say I never came across a more useless lot of fellows. As regards any practical work, even in the simplest cases of cattle sickness, they were often so hopelessly wrong in diagnosis that I felt no confidence in sending them anywhere.

An old friend of mine in the profession who has had an unqualified assistant for many years, advised me to try one, with the result that I have got a man who has been with me now for two years—a well educated, thoroughly practical fellow, whom I have every confidence in sending to my clients. I make no pretence as to his qualification, but he has the confidence of my clients, he suits me and suits them, and personally I would rather give him £5 a week than go through again what I went through with the so-called present-day qualified assistant. What the Colleges teach them nowadays I have failed to discover, unless it is to set an abnormal value on their own importance. I am not in practice for philanthropic purposes; I do the best I can for my clients, endeavouring at the same time to do the best I can for myself.

There is no doubt that until the Colleges realize the importance of teaching the youngsters practical work we shall never be able to do without the unqualified man.—Yours truly,

AN OLD PRACTITIONER.